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09/847,466	05/01/2001	Gerrit J. van den Engh	UW - van den Engh	7465
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EXAMINER				
LEE, SHUN K				
ART UNIT		PAPER NUMBER		
2878				

DATE MAILED: 02/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/847,466

Applicant(s)

VAN DEN ENGH, GERRIT J.

Examiner

Shun Lee

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2003 and 20 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-71 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 33-37, 39-50, 62-68 and 70 is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-32 and 51-61 is/are rejected.
- 7) ☒ Claim(s) 38, 69 and 71 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 May 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the automated system features (as recited in claims 48-50 and 65-71) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Applicant argues that completeness of a drawing under 37 C.F.R. §1.83 is met when the drawing shows the structural detail that is of sufficient importance to be described. Examiner respectfully disagrees. 37 C.F.R. §1.83 states that: (a) The drawing in a nonprovisional application must show every feature of the invention specified in the claims. However, conventional features disclosed in the description and claims, where their detailed illustration is not essential for a proper understanding of the invention, should be illustrated in the drawing in the form of a graphical drawing symbol or a labeled representation (e.g., a labeled rectangular box). (b) When the invention consists of an improvement on an old machine the drawing must when possible exhibit, in one or more views, the improved portion itself, disconnected from the old structure, and also in another view, so much only of the old structure as will suffice to show the connection of the invention therewith. (c) Where the drawings in a nonprovisional application do not comply with the requirements of paragraphs (a) and (b) of this section, the examiner shall require such additional illustration within a time period of not less than two months from the date of the sending of a notice thereof. Such corrections are subject to the requirements of § 1.81(d). Thus the drawings fail to show every

feature of the invention specified in the claims and fails to comply with both 37 CFR 1.81 and 37 CFR 1.83.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 15, 25, and 38 are objected to because of the following informalities:
 - (a) in claim 15, "a forward direction of propagation of a radiation beam" on lines 3-4 should probably be --their forward direction of propagation-- (since applicant states on pg. 4 of remarks filed 19 June 2003 that claims 15, 25 and 38 were amended to recite that the direction of propagation for radiation beams passing through two or more pin holes is changed so they are orthogonal to their forward direction of propagation);
 - (b) in claim 25, "a forward direction of propagation of a radiation beam" on lines 3-4 should probably be --their forward direction of propagation-- (since applicant states on pg. 4 of remarks filed 19 June 2003 that claims 15, 25 and 38 were amended to recite that the direction of propagation for radiation beams passing through two or more pin holes is changed so they are orthogonal to their forward direction of propagation);
 - (c) in claim 38, "radiation beams" on line 2 should probably be --said radiation beams--; and

(d) in claim 38, "a forward direction of propagation of a radiation beam" on line 3 should probably be --their forward direction of propagation-- (since applicant states on pg. 4 of remarks filed 19 June 2003 that claims 15, 25 and 38 were amended to recite that the direction of propagation for radiation beams passing through two or more pin holes is changed so they are orthogonal to their forward direction of propagation).

Appropriate correction is required.

3. Claims 69 and 71 are objected to under 37 CFR 1.75 as being a substantial duplicate of claim 49. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3, 6, 7, 19-23, 28-32, 51, 53, and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ebbing (US 5,648,847) in view of Applicant's Admitted Prior Art and Demiryont (US 6,416,194).

In regard to claim 1, Ebbing discloses (Fig. 3A) a radiation directing device, comprising a screen (20) having a mirrored surface (column 4, lines 48-51) interrupted

by one or more pin holes (22, 22b; column 5, lines 4-7) that pass through said screen (20) such that the inner surface of the pin holes (22, 22b) is coaxial (column 4, lines 57-61) with the laser beam path (13), said pin holes (22, 22b) inherently having an elliptical shape (*i.e.*, the pin hole inner surface is a cylinder with the cylinder axis centered on the laser beam path 13, thus the pin holes 22, 22b have an elliptical shape since the surfaces of the screen 20 are non-orthogonal relative to the cylinder axis), wherein the major axis of said elliptical pin holes is about 0.1 to 2 mm (*e.g.*, 1.3 mm width; column 4, lines 51-54). The device of Ebbing lacks that the mirrored surface is proximal to a radiation beam source. However, geometric principles for mirror orientation are well known in the art. For example, applicant admits (pg. 13, lines 11-15) as Prior Art that "Using well known geometric principles, one skilled in the art can select an orientation or shape for a mirrored surface that produces a desired correlation between a reflected image and the direction of a radiation beam". As another example, Demiryont teaches (column 1, lines 14-59) that mirrors are known in the art as either front-surface or back-surface mirrors. Demiryont also teaches (Fig. 6) that a mirror oriented as a back-surface mirror (1151RR, t1151RR) have higher reflectivity in certain wavelength region (*e.g.*, a 633 nm HeNe radiation beam) than the same mirror oriented as a front-surface mirror (1151R, t1151R). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to geometrically orient the mirror in the device of Ebbing as a back-surface mirror, in order to obtain a higher reflectivity for the HeNe radiation beam (*i.e.*, 633 nm) from the HeNe laser beam source (12 in Fig. 1; column 1, lines 34-39).

In regard to claims **19** and **28**, Ebbing is applied as in claim 1 above. Ebbing also discloses (Fig. 3A) a means (26a; column 5, lines 53-55) for detecting a radiation beam reflected by said mirrored surface, wherein said detecting means (26a) determines a position of the radiation beam relative to said pin hole (22, 22b).

In regard to claim **2** (which is dependent on claim 1) and claim **20** (which is dependent on claim 19), Ebbing also discloses (Fig. 3A) that said mirrored surface comprises a planar surface.

In regard to claim **3** (which is dependent on claim 2) and claim **21** (which is dependent on claim 19), Ebbing also discloses (Fig. 3A) that said pin holes (22, 22b) are disposed at a substantially non-orthogonal angle with respect to said planar surface.

In regard to claim **6** which is dependent on claim 1, the device of Ebbing lacks an explicit description that said mirrored surface has dimensions of 18 mm by 18 mm. However, Ebbing teaches (Fig. 3A) that the mirrored surface has large enough dimensions so as to reflect a radiation beam (15a) which is not aligned with pin hole (22) to a detector (26a). Therefore it would be obvious to one of ordinary skill at the time of the invention to select large enough dimensions (e.g., 18 mm by 18 mm) for the mirrored surface in the device of Ebbing, in order to reflect a radiation beam which is not aligned with a pin hole.

In regard to claim **7** (which is dependent on claim 1) and claim **23** (which is dependent on claim 19), the apparatus of Ebbing lacks an explicit description that said screen having a mirrored surface is interrupted by 3 pin holes passing through said screen. However, Ebbing teaches (column 5, lines 4-7) to provide multiple pin holes in

order to check for divergence. Therefore it would be obvious to one of ordinary skill at the time of the invention to provide multiple pin holes (e.g., 3 pin holes) in the apparatus of Ebbing, in order to check for beam divergence.

In regard to claim **22** which is dependent on claim 19, Ebbing also discloses (Fig. 3A) that said mirrored surface is placed to reflect a radiation beam at an angle 2 times β .

In regard to claim **29** which is dependent on claim 19, the apparatus of Ebbing lacks an explicit description that said radiation detecting means further comprises an image detection device. Ebbing also teaches (column 6, lines 1-11) to provide an alignment pattern so as to determine the position of the beam. Further, provision of an image detection device instead of direct visual observation is well known in the art. Therefore it would be obvious to one of ordinary skill at the time of the invention to provide an image detection device as the radiation detecting means in the radiation directing device of Ebbing, in order to determine the location of the beam on an alignment pattern.

In regard to claims **30** and **31** which are dependent on claim 19, the apparatus of Ebbing lacks a means for collimating radiation reflected by said mirrored surface, said collimating means (*i.e.*, means for directing radiation) placed to direct radiation to said radiation detecting means. Ebbing teaches (column 5, lines 4-7) to provide multiple pin holes in order to check for divergence. Therefore it would be obvious to one of ordinary skill at the time of the invention to provide multiple pin holes and a collimating means in

the apparatus of Ebbing, in order to collimate and direct a divergent beam to a detector so as to check for beam divergence.

In regard to claim **32** which is dependent on claim 19, Ebbing also discloses (Fig. 3A) a means (16) for directing radiation to said screen (20).

In regard to claim **51**, Ebbing is applied as in claim 1 above. Ebbing also discloses (column 2, lines 37-39) that said mirrored surface prevents passage of radiation in the UV, VIS or IR regions of the spectrum (e.g., a HeNe or HeCd laser beam; column 1, lines 37-40; and a HeNe laser beam is inherently a VIS beam such as 633 nm).

In regard to claim **53** (which is dependent on claim 1) and claim **59** (which is dependent on claim 19), Ebbing also discloses (column 2, lines 39-43) that said pin hole comprises a material transparent to radiation in the UV, VIS or IR regions of the spectrum.

6. Claims 5, 52, 54, 55, 60, and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ebbing (US 5,648,847) in view of Applicant's Admitted Prior Art and Demiryont (US 6,416,194) as applied to claims 1, 53, and 59 above, and further in view of Walker *et al.* (US 3,813,172) and Koso (US 4,801,810).

In regard to claim **5** (which is dependent on claim 1), claim **52**, claims **54** and **55** (which are dependent on claim 53), and claims **60** and **61** (which are dependent on claim 59), the apparatus of Ebbing lacks that the pinhole mirror comprises a metal or metallic layer having apertures deposited on a material such as glass or quartz. Pinhole mirrors are well known in the art. For example, Walker *et al.* teach (column 4, lines 1-

18) that a pinhole mirror comprises a metal or metallic layer having apertures deposited on a material such as glass or the like and Koso teaches (column 3, lines 36-39) that preferred mirror materials are glass or quartz. Therefore it would be obvious to one of ordinary skill at the time of the invention that the pinhole mirror (20) in the apparatus of Ebbing comprises a metal or metallic layer having apertures contacting a material such as glass or quartz.

7. Claims 8-11, 13-18, 24-27, and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ebbing (US 5,648,847) in view of Applicant's Admitted Prior Art and Demiryont (US 6,416,194) as applied to claims 19 and 23 above, and further in view of Bayrock *et al.* (US 6,353,657).

The specification states (pg. 7, lines 1-7) that "As used herein, the term "juxtaposed" is intended to mean directly adjacent. The term can include direct contact by attachment mediated, for example, by adhesion or fastening. The term includes, for example, a prism directly adjacent to a pin hole due to attachment of the prism, with an adhesive compound, to a surface through which the pin hole passes". Thus it is noted that the claim limitation "juxtaposed" within the context of the specification means directly adjacent such as direct contact due to attachment.

In regard to claims **8-11** and **13-18**, claims **24** and **25** (which are dependent on claim 19), and claims **26** and **27** (which are dependent on claim 23), Ebbing is applied as in claims 1-3, 6, and 7 above. While Ebbing also discloses (Fig. 3A) means (14, 16, 18) for changing the direction of propagation and (column 3, lines 24-26) that other optical paths may be provided as desired, the device of Ebbing lacks an explicit

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description of a means (e.g., one or more prisms) for changing the direction of propagation for radiation beams passing through said one or more pin holes, said direction changing means and said one or more pin holes being juxtaposed and placed to direct the radiation beams passing through said 2 or more pin holes orthogonal to each other or placed at an angle β with respect to a line intersecting said pin holes. However, the geometric principles of mirrors or prisms (i.e., direction changing means) are well known in the art. For example, Bayrock *et al.* teach (column 2, line 33 to column 3, line 25) to position direction changing means (e.g., mirrors or prisms) for changing the direction of propagation for radiation beams in order to obtain a folded optical path so as to minimize device housing dimensions. Therefore it would be obvious to one of ordinary skill at the time of the invention to a position direction changing means (e.g., prisms juxtaposed the one or more pin holes at an angle β with respect to a line intersecting the pin holes) in the device of Ebbing, in order to obtain multiple folded optical paths (e.g., orthogonal optical paths) so as to minimize the device housing dimensions as taught by Bayrock *et al.*

In regard to claim **56** which is dependent on claim 8, Ebbing is applied as in claim 53 above.

8. Claims 12, 57, and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ebbing (US 5,648,847) in view of Applicant's Admitted Prior Art, Demiryont (US 6,416,194), and Bayrock *et al.* (US 6,353,657) as applied to claims 8 and 56 above, and further in view of Walker *et al.* (US 3,813,172) and Koso (US 4,801,810).

In regard to claim **12** (which is dependent on claim 8) and claims **57** and **58** (which are dependent on claim 56), Walker *et al.* and Koso is applied as in claim 5, 54, and 55 above.

Response to Amendment

9. The declaration under 37 CFR 1.132 filed 20 November 2003 is sufficient to overcome the rejection of claims 33-50 and 62-71 based upon Asbury *et al.* ("Polarization of scatter and fluorescence signals in flow cytometry" Cytometry 40:88-101, 2000) applied under 35 U.S.C. 102 and 35 U.S.C. 103.

Allowable Subject Matter

10. Claims 33-37, 39-50, 62-68, and 70 are allowed.

11. The following is a statement of reasons for the indication of allowable subject matter: the instant application is deemed to be directed to a nonobvious improvement over the invention patented in US Patent 5,648,847. The improvement comprises in combination with other recited elements, a means for directing a radiation beam from a flow chamber to a screen; a means for directing a radiation beam to a screen attached to a positioning device; a flow chamber attached to a positioning device; and a means for directing radiation to a flow chamber attached to a positioning device.

Response to Arguments

12. Applicant's arguments, see first paragraph on pg. 6, filed 19 June 2003, with respect to claims 19-47 and 59-64 have been fully considered and are persuasive since

it is noted that collimate is defined¹ as "To adjust the line of sight of (an optical device)" in addition "To make parallel; line up". The 35 U.S.C. 112, second paragraph rejection of claims 19-47 and 59-64 has been withdrawn.

13. Applicant's arguments with respect to amended independent claims 1, 19, and 51 (and claims depending therefrom) have been considered but are moot in view of the new ground(s) of rejection.

In addition, applicant argues (last two paragraphs on pg. 9 of remarks filed 19 June 2003) that claim 52 differs from claim 5 in that it recites a metallic coating of a mirror. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (*i.e.*, a mirrored surface proximal to a radiation beam source) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). It should be noted that a mirrored surface proximal to a radiation beam source was not recited in rejected claim 52. Thus, applicant's arguments are not persuasive.

14. Applicant's arguments (pg. 10-11 of remarks filed 19 June 2003) filed 19 June 2003 have been fully considered but they are not persuasive.

Applicant argues that Ebbing and Bayrock *et al.* describe mirrors in non-juxtaposed positions and that the cited references are completely devoid of any teaching, suggestion or motivation to juxtapose a direction changing means to one or

¹ The American Heritage® Dictionary of the English Language, Third Edition copyright © 1992 by

more pin holes. In response to applicant's argument that juxtaposing a direction changing means to one or more pin holes is not explicitly described by the cited references, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). Ebbing states (column 3, lines 12-27) that "The particular optical arrangement shown in FIG. 1 is provided for purposes of example. Other optical paths may be provided as desired without departing from the spirit and scope of the present invention". Bayrock *et al.* state (column 3, lines 12-27) that "Preferably, the redirecting elements are shaped and/or positioned in such a manner so as to encompass the full field of view of the associated imaging sensor along an optical plane ... Accordingly, it is a technical advantage of a preferred embodiment of the present invention to provide a smaller camera housing for a predefined imaging screen size". Bayrock *et al.* also illustrates (Figs. 5A and 5B) the geometric principles of the redirecting elements (e.g., 505) which is positioned (e.g., juxtaposed with element 503) to provide the technical advantage of a smaller housing. It is clear from Figs. 5A and 5B of Bayrock *et al.* that a smaller housing is obtained when redirecting element 505 is juxtaposed with element 503 (in contrast with element 503 which is not juxtaposed with --i.e., positioned away from-- redirecting element 505 which results in a larger housing).

Therefore it would be obvious to one of ordinary skill at the time of the invention to a position direction changing means (e.g., prisms juxtaposed the one or more pin holes at an angle β with respect to a line intersecting the pin holes) in the device of Ebbing, in order to obtain multiple folded optical paths (e.g., orthogonal optical paths) so as to minimize the device housing dimensions as taught by Bayrock *et al.*

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (571) 272-2439. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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